CLAIMS

1. A device for applying a biocompatible agent to a tissue surface, comprising:

a housing having a biocompatible agent conduit connectable to a source of a biocompatible agent, the conduit including a biocompatible agent outlet adapted to emit a biocompatible agent;

a gas conduit associated with the housing, connectable to a source of a pressurized medical gas and having an outlet adapted to emit pressurized medical gas in an orientation carrying biocompatible agent from the biocompatible agent outlet to a tissue surface; and

a gas regulator adapted to provide medical gas to the outlet of the gas conduit at at least two predetermined positive gas pressures.

2. A device as in claim 1, comprising a port connectable to a reservoir of a biocompatible agent and fluidly connected to the biocompatible agent conduit.

3. A device as in claim 1, further comprising a valve associated with the biocompatible agent conduit switchable from a closed conduit position to an open conduit position.

4. A device as in claim 1, wherein the gas regulator is a valve associated with the gas conduit.

5. A device as in claim 1, wherein the gas regulator is associated with a controller remoter from the device.

6. A device as in claim 1, further comprising a biocompatible agent valve associated with the biocompatible agent conduit switchable from a closed conduit position to an open conduit position, wherein the gas regulator is a gas valve associated with the gas conduit and the biocompatible agent conduit and the gas conduit are together switchable with a single actuator.

7. A device as in claim 1, comprising at least two ports connectable to at least two separate reservoirs each containing a biocompatible agent, each port fluidly connected to a biocompatible agent conduit including a biocompatible agent outlet adapted to emit a biocompatible agent.

8. A device as in claim 1, comprising at least two ports connectable to at least two separate reservoirs of biocompatible agent and including first and second biocompatible agent outlets, respectively, and at least two gas conduits associated with the housing, each connectable to a source of a medical gas and having a gas outlet adapted to emit pressurized medical gas in an orientation carrying biocompatible agent from a biocompatible agent outlet to a tissue surface.

9. A device as in claim 1, comprising at least two ports connectable to at least two separate reservoirs of biocompatible agent, each port fluidly connected to a conduit including a biocompatible agent outlet adapted to emit a biocompatible agent in an orientation allowing medical gas emitted form the outlet of the gas conduit to carry biocompatible agent to the tissue surface.

10. A device as in claim 1, further comprising at least two separate reservoirs of biocompatible agent, and at least two ports connectable to the at least two separate reservoirs of biocompatible agent, each port fluidly connected to a separate biocompatible agent conduit including a separate outlet.

11. A device as in claim 10, wherein each of the at least two separate reservoirs is connectable to a source of pressurized gas.

12. A device as in claim 10, wherein each of the at least two separate reservoirs is connectable to the source of pressurized medical gas to which the gas conduit is connectable.

13. A device as in claim 12, further comprising a source of medical gas at a pressure greater than atmospheric pressure connected to the gas conduit and connected to

the at least two separate reservoirs.

14. A device as in claim 1, further comprising a source of medical gas at a pressure greater than atmospheric pressure connected to the gas conduit.

15. A device as in claim 14, further comprising a reservoir of a biocompatible agent connected to the biocompatible agent conduit and connected to the source of pressurized medical gas.

16. A device as in claim 1, further comprising a source of medical gas at a pressure greater than atmospheric pressure, and at least one reservoir of biocompatible agent.

17. A device as in claim 1, wherein the at least two predetermined gas pressures include a first predetermined gas pressure sufficient to carry a biocompatible agent from the biocompatible agent outlet to the tissue surface, and a second predetermined gas pressure less than the first pressure, sufficient to clear residual biocompatible agent from the biocompatible agent outlet.

18. A device as in claim 1, further comprising an emitter of energy mounted so as to direct energy at biocompatible agent that has been conveyed from the biocompatible agent outlet onto a tissue surface.

19. A device as in claim 10, wherein the at least two separate reservoirs of biocompatible agent comprise at least two agents that, when mixed, chemically react to form a tissue coating.

20. A device as in claim 19, wherein at least one of the at least two agents comprises a synthetic polymer.

21. A device as in claim 19, wherein each of the at least two agents comprises a synthetic polymer.

22. A device as in claim 19, wherein each of the at least two agents consists essentially of a synthetic polymer.

23. A device as in claim 1, further comprising at least two separate reservoirs of biocompatible agent mounted on the device, a source of medical gas at a pressure greater than atmospheric pressure, at least two ports connected to the at least two separate reservoirs of biocompatible agent each fluidly connected to a separate biocompatible agent conduit including a separate outlet adapted to emit biocompatible agent to a tissue surface, and at least two gas conduits each connected to the source of pressurized medical gas and having an outlet adapted to emit pressurized medical gas in an orientation carrying biocompatible agent from the outlet of a biocompatible agent conduit to a tissue surface.

24. A device as in claim 23, wherein the at least two predetermined gas pressures include a first predetermined gas pressure sufficient to carry a biocompatible agent from the biocompatible agent outlet to the tissue surface, and a second predetermined gas pressure less than the first pressure, sufficient to clear residual biocompatible agent from the biocompatible agent outlet.

25. A device as in claim 24, wherein each of the at least two separate reservoirs is connected to a source of gas at a pressure greater than atmospheric pressure.

26. A device as in claim 25, wherein each of the at least two separate reservoirs is connected to the source of pressurized medical gas to which the at least two gas conduits are connected.

27. A device as in claim 26, further comprising an emitter of energy mounted so as to direct energy at biocompatible agent emitted from a biocompatible agent outlet to a tissue surface.

28. A device as in claim 27, wherein the at least two separate reservoirs of

biocompatible agent comprise at least two agents that, when mixed, chemically react to form a tissue coating.

29. A device as in claim 27, wherein at least one of the at least two agents comprises a synthetic polymer.

30. A device for applying a biocompatible agent to a tissue surface, comprising:

a reservoir of a biocompatible agent connectable to a source of a pressurized gas;

a housing having a biocompatible agent conduit connectable to the biocompatible agent reservoir, including a biocompatible agent outlet adapted to emit an agent to a tissue surface; and

a gas conduit associated with the housing connectable to a source of a pressurized medical gas and having a gas outlet adapted to emit pressurized medical gas in an orientation carrying biocompatible agent from the outlet of the biocompatible agent conduit to a tissue surface.

31. A device as in claim 30, wherein the gas conduit and the reservoir of biocompatible agent are each connectable to a single source of a medical gas.

32. A device for applying a biocompatible agent to a tissue surface, comprising:

a housing having at least two biocompatible agent conduits each connectable to a source of a biocompatible agent and each including a biocompatible agent outlet adapted to emit a biocompatible agent;

at least two gas conduits associated with the housing, each connectable to a source of a medical gas at a pressure greater than atmospheric pressure and each having a separate gas outlet associated with one of the at least two biocompatible agent outlets, adapted to emit pressurized medical gas in an orientation carrying biocompatible agent from a biocompatible agent outlet to a tissue surface,

wherein the at least two biocompatible agent outlets and the at least two

gas outlets define together at least two agent/gas delivery outlets integral with a surrounding surface of the device defining a planar area greater than at least twice the cross sectional area of the agent/gas delivery outlets.

33. A device for the application of a coating to a tissue surface of a patient, wherein the device comprises:

a fluid inlet port configured to connect to a source of a fluid;

a gas inlet port configured to connect to a source of pressurized medical gas;

a fluid delivery outlet, and a fluid conduit fluidly connecting the fluid delivery outlet with the fluid inlet port;

a valve associated with the fluid conduit able to regulate the outflow of fluid from the fluid delivery outlet;

a gas outlet proximate the fluid delivery outlet, and a gas conduit fluidly connecting the gas outlet with the gas port; and

means for regulating the rate of gas flow through the gas outlet wherein, while said device is in operation, gas flow is maintained at a flow level sufficient to remove any fluid present at the fluid delivery outlet.

34. A device as in claim 33, comprising:

at least two fluid inlet ports configured to connect to at least two sources of fluid;

a source of medical gas at a pressure greater than atmospheric pressure;

at least two fluid delivery outlets, and fluid conduits fluidly connecting the fluid delivery outlets with the fluid inlet ports;

at least two valves associated with the fluid conduits each able to regulate the outflow of fluid from the fluid delivery outlet;

an annular gas outlet proximate each fluid delivery outlet; and

means for regulating the rate of gas flow through the annuli wherein, while said device is in operation, gas flow is maintained at a flow level sufficient to remove any fluid present at the fluid delivery outlets.

35. A device as in claim 33, further comprising a source of fluid at a pressure greater than atmospheric pressure connectable to the fluid inlet port.

36. A device as in claim 35, wherein the source of fluid is a reservoir mounted on the device.

37. A device as in claim 33, further comprising a source of fluid that is a reservoir mounted on the device.

38. A device as in claim 34, further comprising at least two sources of fluid, wherein components of each of the at least two fluids chemically react upon mixing.

39. A device as in claim 34, wherein each of the fluid delivery outlets defines a separate annulus.

40. A device as in claim 33, wherein the gas outlet surrounds the fluid delivery outlet and the fluid delivery outlet does not protrude substantially beyond the gas outlet.

41. A device as in claim 33, wherein the fluid delivery outlet is surrounded by a surface of the device and does not protrude substantially from the surface.

42. A device as in claim 41, wherein the fluid delivery outlet is flush with the surface.

43. A device as in claim 33, further comprising a source of fluid that is a syringe barrel including a septum slidably disposed in the barrel.

44. A device as in claim 33, further comprising a source of fluid that is a syringe barrel including a septum slidably disposed in the barrel, wherein the barrel is connectable to a source of pressure greater than atmospheric pressure.

45. A device as in claim 44, wherein the source of fluid is a syringe barrel mounted on the device.

46. A device as in claim 33, further comprising a conduit associated with the device for transmitting energy to fluid delivered from the fluid delivery outlet.

47. A device as in claim 38, wherein at least one of the reactive components comprises a synthetic polymer.

48. A device as in claim 47, wherein each reactive component comprises a synthetic polymer.

49. A device as in claim 47, wherein each reactive component consists essentially of a synthetic polymer.

50. A device as in claim 35, comprising at least one biologically active material in the source of fluid.

51. A device as in claim 35, wherein the source of fluid forms a coating on living tissue for the treatment of a medical condition

52. A device as in claim 34, further comprising at least two reservoirs of biocompatible fluid mounted by the device connected to the at least two fluid inlet ports, respectively, and connected to the source of medical gas.

53. A device as in claim 52, wherein the at least two reservoirs of biocompatible fluid mounted by the device are at least two syringe barrels each including a septum slidably disposed in the barrel, the barrel connected to the source of medical gas.

54. A device as in claim 52, wherein the at least two biocompatible fluids chemically react upon mixing.

55. A device as in claim 52, wherein each of the fluid delivery outlets defines a separate annulus, and the annular gas outlet proximate each fluid delivery outlet surrounds a fluid delivery outlet and defines a substantially annular, coaxial fluid/gas delivery outlet that is flush with a surrounding surface of the device defining a planar area greater than at least twice the cross sectional area of the fluid/gas delivery outlet.

56. A device as in claim 52, further comprising a conduit associated with the device for transmitting energy to fluid delivered from the fluid delivery outlet

57. The use of the device of claim 33 for the treatment of a medical condition.

58. The use of claim 57, wherein the treatment comprises prevention of adhesions; sealing of leaks of bodily fluids or air; sealing of anastamoses, staple lines and suture lines; coating surfaces to protect them; adhering tissues together or adhering tissue to an implant; formation of implants for delivery of drugs or cells, or for mechanical support; and dressing of external and internal wounds.

59. A method comprising:

applying gas pressure to a biocompatible agent thereby urging the agent through an orifice;

applying the agent urged through the orifice to a tissue surface by directing a flow of a medical gas at the agent and carrying the agent from the orifice to the tissue surface with the gas flow.

60. A method comprising:

applying a biocompatible agent to a tissue surface by carrying the agent from an outlet of a conduit to the tissue surface with a medical gas provided at a first pressure;

ceasing application of the agent to the tissue surface; and

clearing any residual biocompatible agent from the outlet by directing the medical gas proximate the outlet at a second pressure less than the first pressure.

61. A method as in claim 60, comprising clearing any residual biocompatible agent from the outlet by directing the medical gas proximate the outlet at the second pressure while not applying biocompatible agent to the tissue surface.

62. A method comprising:

emitting a biocompatible agent from an outlet of a conduit with a medical gas provided at a first pressure;

ceasing emission of the agent; and

clearing any residual biocompatible agent from the outlet by directing the medical gas proximate the outlet at a second pressure less than the first pressure.